

WHAT IS CLAIMED IS:

1. A discharge lamp starting device comprising:
a discharge lamp driving circuit which drives a
discharge lamp using a high frequency wave, and starts
the discharge lamp;

a booster/chopper circuit having a switching
element, the booster/chopper circuit boosting an input
power supply voltage by switching the switching
element;

a boosting transformer which supplies the
discharge lamp with a voltage boosted by the
booster/chopper circuit; and

a booster/driver circuit which supplies the
switching element of the booster/chopper circuit with a
driving signal having a frequency of 10 to 200 kHz,
thereby limiting a peak loss of the switching element
to 200 W or less.

2. The discharge lamp starting device according
to claim 1, wherein the booster/driver circuit outputs
a driving signal to the switching element of the
booster/chopper circuit, thereby making constant the
voltage boosted by the booster/chopper circuit.

3. The discharge lamp starting device according
to claim 1, wherein the discharge lamp driving circuit
includes:

two switching elements which perform inverter
operations;

a two-transistor driving circuit which drives the two switching elements; and

control means for controlling, to 35 to 47%, an oscillation ON-duty ratio of a signal supplied from the two-transistor driving circuit to the two switching elements.

4. The discharge lamp starting device according to claim 2, wherein the discharge lamp driving circuit includes:

two switching elements which perform inverter operations;

a two-transistor driving circuit which drives the two switching elements; and

control means for controlling, to 35 to 47%, an oscillation ON-duty ratio of a signal supplied from the two-transistor driving circuit to the two switching elements.

5. An illumination apparatus comprising:

a discharge lamp including a pair of electrodes configured to discharge electricity in a light-transmitting, at least one of the electrodes being provided on an outer surface or an inner surface of the light-transmitting bulb; and

a discharge lamp starting device as defined in claim 1.

6. An illumination apparatus comprising:

a discharge lamp including a pair of electrodes

configured to discharge electricity in a light-transmitting bulb, at least one of the electrodes being provided on an outer surface or an inner surface of the light-transmitting bulb; and

5 a discharge lamp starting device as defined in claim 2.

7. An illumination apparatus comprising:

 a discharge lamp including a pair of electrodes configured to discharge electricity in a light-transmitting bulb, at least one of the electrodes being
10 provided on an outer surface or an inner surface of the light-transmitting bulb; and

 a discharge lamp starting device as defined in claim 3.

15 8. An illumination apparatus comprising:

 a discharge lamp including a pair of electrodes configured to discharge electricity in a light-transmitting bulb, at least one of the electrodes being
20 provided on an outer surface or an inner surface of the light-transmitting bulb; and

 a discharge lamp starting device as defined in claim 4.

9. A discharge lamp starting device comprising:

 a discharge lamp driving circuit which drives a
25 discharge lamp using a high frequency wave, and starts the discharge lamp;

 a booster/chopper circuit having a switching

element, the booster/chopper circuit boosting an input power supply voltage by switching the switching element;

5 a boosting transformer which supplies the discharge lamp with a voltage boosted by the booster/chopper circuit; and

a booster/driver circuit which supplies the switching element with a signal such that a time required for a switching loss waveform of the switching element to rise or fall falls within a range of 1 nsec to 1 μ sec, a peak loss of the switching element being limited to 200 W or less.

10 10. The discharge lamp starting device according to claim 9, wherein the booster/driver circuit outputs a driving signal to the switching element of the booster/chopper circuit, thereby making constant the voltage boosted by the booster/chopper circuit.

15 11. The discharge lamp starting device according to claim 9, wherein the discharge lamp driving circuit (30) includes:

20 two switching elements which perform inverter operations;

a two-transistor driving circuit which drives the two switching elements; and

25 control means for controlling, to 35 to 47%, an oscillation ON-duty ratio of a signal supplied from the two-transistor driving circuit to the two switching

elements.

12. The discharge lamp starting device according to claim 10, wherein the discharge lamp driving circuit includes:

5 two switching elements which perform inverter operations;

a two-transistor driving circuit which drives the two switching elements; and

10 control means for controlling, to 35 to 47%, an oscillation ON-duty ratio of a signal supplied from the two-transistor driving circuit to the two switching elements.

13. An illumination apparatus comprising:

15 a discharge lamp including a pair of electrodes configured to discharge electricity in a light-transmitting bulb; at least one of the electrodes being provided on an outer surface or an inner surface of the light-transmitting bulb; and

20 a discharge lamp starting device as defined in claim 9.

14. An illumination apparatus comprising:

25 a discharge lamp including a pair of electrodes configured to discharge electricity in a light-transmitting bulb; at least one of the electrodes being provided on an outer surface or an inner surface of the light-transmitting bulb; and

a discharge lamp starting device as defined in

claim 10.

15. An illumination apparatus comprising:

a discharge lamp including a pair of electrodes
configured to discharge electricity in a light-
5 transmitting bulb, at least one of the electrodes being
provided on an outer surface or an inner surface of the
light-transmitting bulb; and

a discharge lamp starting device as defined in
claim 11.

10 16. An illumination apparatus comprising:

a discharge lamp including a pair of electrodes
configured to discharge electricity in a light-
transmitting bulb, at least one of the electrodes being
provided on an outer surface or an inner surface of the
15 light-transmitting bulb; and

a discharge lamp starting device as defined in
claim 12.